

LandScan USA: Improving How We Count Populations at Risk for Homeland Security Needs

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EPA's National Center for Environmental Assessment (NCEA) and the Office of Civil Rights are collaborating with Department of Energy, Oak Ridge National Laboratory (ORNL) to develop LandScan USA, a high resolution population distribution database for the U.S. LandScan uses census data and other geospatial data layers (land use/cover, slope, topography, road locations, nighttime lights, satellite imagery) to greatly improve our knowledge of where people are located. ORNL developed LandScan Global in 1998 at a 1 kilometer grid cell size. LandScan USA, based on a 90 meter grid cell, includes both daytime and nighttime populations distributions. A LandScan USA pilot was developed for 29 counties in southeastern Texas. LandScan USA's smaller grid cell fills the need for high resolution information on spatial distributions of populations, and has great potential for supporting and improving various socio-environmental studies.

LandScan USA provides more spatially precise population/demographic information compared to Census data. EPA uses Census data to estimate populations living within specified distances from point sources or within contaminated areas. Census data can cause great uncertainty in determining where residents are actually located, particularly in suburban/rural areas where population density is much lower than in urban areas. Such uncertainty causes misclassification of people with respect to residential distance from point sources, or within pollutant plumes. This misclassification also increases the difficulty of determining if certain sub-populations are more likely than others to live closer to polluting facilities or be in more polluted areas. LandScan USA will greatly reduce this misclassification error.

LandScan USA has a user-friendly tool that allows for rapid calculation of: 1) daytime and nighttime populations located in any prescribed area (e.g., within specified distances from point sources or within plumes); 2) populations located "near" multiple sources/facilities or within plumes from multiple sources; 3) a full suite of sociodemographic variables/subgroups.

LandScan USA allows incorporation of user data on sources, exposures, etc. and will be invaluable to support: 1) development of emergency response plans by improving knowledge of daytime/nighttime populations relative to potential hazards (e.g., location of TSDFs); 2) homeland security by improving knowledge of populations relative to sites of potential terrorist activities and refining estimates of numbers of people potentially exposed, injured and/or killed; 3) EJ analyses by improving knowledge populations in different sociodemographic groups living in proximity to pollution sources or exposed to different levels of pollution; 4) exposure/risk assessment by reducing misclassification of populations relative to point and area sources and potential exposures; and 5) evaluation of risks from cumulative and aggregate exposures by improving estimation of populations located in areas with multiple sources and contaminants.

***Please note that this poster will be developed jointly between NCEA and ORNL.

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